Is the Blue Bin Causing Us to be Less Green?: The impact of recycling on our waste behaviors

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Shay Firsty

Abstract

Recycling incentives are tools that have been used by governments throughout the globe for decades in an attempt to reduce waste creation and improve the climate crisis situation. However, contrary to its intentions, recycling incentives have created a “warm-glow effect” about recycling that overpowers the negative feelings associated with wasting in the first place, causing individuals to consume more resources than they might otherwise. In attempting to build off of previous research surrounding the psychology behind recycling behaviors, my research aims to serve as a case study of these behaviors that backs these prior findings. We plan to use data collected through LMU’s Facilities Management team to discern the true impacts of pre and post-recycling removal on waste creation on campus.

Introduction

The concept of recycling has been taught and instilled into individuals around the world from a very young age. We define recycling as "the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products" (EPA). We are told to sort our waste into either trash or recycling, with the understanding that the items we recycle are going to, somehow, be used in the creation of other products.

Recycling dates back all the way to the 9th century in Japan and has been around ever since. However, the concept really began to be utilized during World War II, when various materials like tin and rubber were in low supply and high demand, war efforts began asking everyday people to conserve and recycle these materials (NERC). Then, in the 1960s, the first curbside collections for recycling began popping up throughout the United States, and the rate of recycling has been increasing rapidly ever since (EPA).

The process as a whole sounds like an effective tactic in reducing waste and contributing less to climate change. We are told that we should recycle because it is "an energy saver" and it prevents global warming, citing data that shows that, "the amount of greenhouse gas in our air goes down the more we recycle" (Clover Imaging Group). This has created a mentality about recycling in which there is a "warm-glow effect" (van Doorn and Kurz) that causes people to feel good about themselves and recycling so much that they do not consider that they may be wasting more in the first place.

Recent research has shown that the presence of recycling often causes people to use/waste more "product" than they would have if recycling was not an option (Sun and Trudel). This inherently negates the whole purpose of recycling because we end up using more products as a whole rather than using a certain amount of products and re-cycling through that specific amount over and over again.

On a college campus that is known for its green initiatives, LEED-certified buildings, and Recyclemania championships, do the results from these prior research experiments still hold up? Does the presence of recycling throughout LMU's campus result in increased amounts of waste?

Background/Related Work and Motivation

In 2017, Monic Sun and Remi Trudel created a theoretical model of recycling that helped analyze the effects on recycling on individuals. To do so, they asked a series of questions to better understand individual's emotions regarding waste creation and mitigation and conducted a series of experiments, which showed that people waste less when trash is the only option, but that once the presence of recycling is introduced, many increase consumption and override the negative emotions associated with created waste in general (Sun and Trudel 2017).

In 2019, Jiang et. al. conducted a survey with 356 participants throughout China to learn more about governmental recycling efforts and their subsequent impact on resource usage. The survey contained statements such as, "I tend to buy products which can be recycled in the future," to which participants would rank their level of agreement with that statement on a 7-point scale (1 = strongly disagree and 7 = strongly agree). Further analysis into the survey's results found that an individual's recycling efforts are related to their resource usage, which was the result of a positive "pro-environment self-identity" (Jiang et. al. 2017).

A 2021 series of experiments conducted by Jenny van Doorn and Tim Kurz looked into specific recycling initiatives and the amount of waste that was generated as a result (van Doorn and Kurz 2021). The first experiment looked at the relationship between food waste and recycling, in which they found that people are less likely to create unnecessary food waste when they think the waste is going to be turned into a useful product. The second study, which looked at the "warm-glow" effect of recycling, found that the positive feelings associated with recycling made participants less likely to avoid creating waste in the first place even though they knew it would be the better option. The third study, which explored the impact of and feelings associated with recycling and behavioral choices, discovered that people are more likely to participate in wasteful behaviors if their end actions make them think they are acting in a less-wasteful manner.

Methods

In order to confirm the previous findings that the option of recycling increases overall waste, I am proposing the conducting of an on-campus experiment that removes the option of recycling from campus temporarily. The most ideal method of doing so is by removing recycling bins throughout campus, including those located in student housing rooms, office spaces, and outdoors (specifically the tri-bins that allow the sorting of waste into paper, waste, and cans and bottles), leaving regular trash bins as the only option. Because our facilities department already partakes in sorting and measuring our various forms of waste on campus, we have prior data on

regular waste generation for the school, giving us numbers to compare our experiment's results to. The removal of the bins would occur prior to either a fall or spring semester and would occur for a minimum of three months, but I would not start recording the new data until the semester begins. This ensures consistency in the comparisons when looking at the times in which campus is running at regular capacity. Doing so also prevents outlying data from fewer people being on campus as a result of summer courses or winter break in which the overall population on campus is far less than a regular semester.

If this option cannot be done (for whatever reason), the next best version of the experiment would be to block or close off the "Paper" and "Bottles and Cans" sections of the tri-bins located throughout LMU's campus. This would still allow for recycling to occur in student residences, buildings, and offices, but not outdoors on campus. This would primarily affect bins on campus that are located near where people can get food, such as the Lair Marketplace or Qdoba. This may have an effect on the production of waste on campus, primarily since students can no longer recycle water bottles or other drinks that they buy very easily. This may not be as effective as the first method due to the lack of fully removing recycling as an option from campus.

However, if neither of these methods gets approved or cannot otherwise be carried out, the last option would be to have LMU campus facilities send out a blast email to all of the students and staff on campus informing them that they would no longer be recycling any of the waste on campus; all of it would be sent to the landfill regardless of its ability to actually be recycled or not. Facilities can still continue to recycle items if they choose to do so, but students and faculty would not have knowledge of this and continue to think that their waste is no longer being recycled. This would be the final resort, though, because not everyone checks their emails, and people will probably forget about the message within a few days, returning their habits back to normal without giving us time to see if there was any statistically significant impact on waste generation through the "removal" of recycling on campus. Furthermore, because this specific method does not actually remove the option from those on campus, habits are less likely to change for better or worse.

Expected Results

In keeping with the same results found in the experiments conducted by Sun and Trudel, van Doorn and Kurz, and in addition to other research, I expect that removing the option of recycling will cause an overall decrease in the amount of waste that LMU generates as a whole. Because prior research has shown that when people have or use eco-friendly alternatives, they tend to relax the behaviors that ensure that these alternatives remain truly sustainable, removing the alternatives "forces" people to behave and act in more environmentally friendly ways.

Conclusion

The goal of this research is to further prior findings that the positive feelings that recycling elicit increase resource consumption. This proposal was motivated by Dr. Trevor Zink's discussions about the negative impacts of recycling in addition to the curiosity surrounding climate change and how individuals can truly be more environmentally friendly. The experiment will be developed and run during at least one fully active semester at Loyola Marymount University and will analyze the amount of waste collected on campus after the removal of the option of recycling. The results of this experiment can be used as a tool to help reduce future resource consumption both on campus and in the real world and further overall recycling and environmental research.

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Budget

- **Compensation for Work Time**- $4000
    - As my timeline for the project shows, I will be working on this research over the course of two semesters and a summer. This compensation would cover what I would have otherwise earned working a regular job, as well as helping to cover food and over-the-summer-rent costs for the duration of the project.
- **Materials for Bin Sealing and Replacement (with rough tax estimation)**- $23,500
    - In order to ensure that people on campus cannot recycle, we must properly seal off recycling bins located throughout campus. This number is for the estimate that there are about 100 tri-bins located throughout campus. The monetary request includes the plastic putty to seal off the bins, the product to cover/seal the bins with, as well as the knife sets needed to apply the putty. Furthermore, we have to provide access to regular waste bins and their accompanying liners to compensate for what would have otherwise ended up in the recycling bins. This would cover all of these associated costs.
        - Additional Bins ($16,241.55)- 200 total bins at $229.99 per set of 4 bins
        - Additional Bin Liners ($5,376)- 224 packs at $23.99 per pack of 50
            - Needs minimal 2 packs per day to put a new bag in each of the additional bins daily (100 of them)
        - Putty Knives ($45)- 15 total at $3 each
        - All-Purpose Caulk ($220)- 40 total at $5.50 each
        - Rubber Sheet to Seal Openings ($1,096.20)- 84 total at $13.05 each
            - We can use one of these sheets to cover roughly three "paper" slots on the tri-bins, and one sheet should cover approximately two separate "Bottles and Cans" bins.

Budget Summary

Item	Cost ($)
Compensation	$4000
Additional Trash Bins	$16,241.55
Additional Trash Bin Liners	$5,376
Putty Knives	$45
All-Purpose Caulk	$220
Rubber Sheets	$1096.20
Total Tax Estimation on Purchases	$161.25
Total Estimated Cost of Project: **$27,500**	